

# Forest Health Protection

## Pacific Southwest Region



Date: February 28, 2002

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To: District Ranger, Hat Creek Ranger District, Lassen National Forest

Subject: Evaluation of the Pine Reproduction Weevil  
Damage to the Torch Fire Plantation (NE02-02)

At the request of Rich Coakley, Silviculturist, Hat Creek Ranger District, Rick Turcotte and I conducted a field evaluation of the Torch Fire Plantation on February 25, 2002. The objective of our visit was to examine the extent of damage caused by the pine reproduction weevil (*Cylindrocopturus eatoni*), document the existing mortality and determine if it would be appropriate to request FHP suppression/prevention funds to suppress the pine reproduction weevil outbreak.

### **Background Information**

The Torch Fire plantation is located on the Hat Creek Ranger District, Lassen NF (T36N, R3E, Sec 24&25, see attached map). The plantation is 30 acres of 9- and 10-year-old ponderosa pine (*Pinus ponderosa*) trees associated with scattered clumps of regenerating Oregon white oak (*Quercus garryana*). Trees were planted at 12x12 foot spacing following the 1990 Torch Fire and range from approximately two feet to six feet in height. Several openings exist throughout the plantation due to rock outcroppings and past mortality of seedlings growing in shallow soils. The site is at 3160 feet elevation and is surrounded by a mixed stand of ponderosa pine and white

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oak of various size classes. Yellow starthistle (*Centaurea solstitialis*) is also present throughout the area.

### **Observations**

Pine reproduction weevil infestation and associated mortality was scattered throughout the plantation with about 40 % of the trees affected (Photo 1). Mortality included trees that were initially attacked last year, which are currently infested with insects in the larval stage (Figure 2), and dead trees with evidence of adult emergence holes from last year's generation, which indicate that the weevil has been causing mortality on the site for at least two years. Affected trees ranged from 2 to 5 feet in height.



Figure 1. Mortality caused by the PRW



Figure 2. Infested tree.

### **Insect Biology**

The pine reproduction weevil (*Cylindrocopturus eatoni*) attacks and kills several species of young pine in California. The adult is about 2.5 mm long by 1.0 mm wide and has dark and light scales, which give it a gray appearance. The eggs are pear-shaped, whitish and translucent. The larvae are small, cream colored legless grubs about 4 mm in length (Figure 3). Adult weevils emerge from infested trees in May or June and feed on pine foliage, twigs and stems for about 2-3 weeks (Figure 4). The female lays single eggs in some of the feeding punctures in the cortex of the main stem and twigs below the current year's growth. As the larvae mature they feed within the phloem-cambium layers between the wood and the outer bark. In the fall, pupal chambers are constructed in the outer layers of the wood or in the pith of smaller diameter stems. The insects over winter as mature larvae in the pupal chambers and pupate late in the following spring. The pupal stage lasts about two weeks after which the adults emerge to complete the life cycle. There is one generation per year.

The weevil usually infests young trees of about 18 inches to 5 feet in height and occasionally attacks trees up to 10 feet. Weevil attack usually results in tree death however sometimes only the upper part of the tree is attacked and killed. Partially attacked trees are frequently re-attacked and completely killed the following year. Attacks are typically detected when trees fade in the

fall. Damage has historically been greatest in plantations on dry sites, during drought years and in plantations suffering from brush competition.



Figure 3. Late instar larva mining into sapwood



Figure 4. Adult feeding on needles

### **Discussion**

Insect population levels and associated tree damage fluctuate seasonally and often go unnoticed. However, additive tree stresses can elevate insect-related damage to detectable levels. In pine plantations, damage caused by the pine reproduction weevil can be attributed to growing conditions. Overstocking, particularly on dry, low production sites, drought, and brush competition are typical factors that predispose young pine to weevil attack.

Treating currently infested trees by cutting and burning is an effective method for controlling pine reproduction weevil populations in the short term. However, due to the poor site quality and shallow soils found throughout the Torch Fire plantation, future tree mortality caused by this insect can be expected in trees under 10 feet in height during periods of prolonged or extreme drought.

This evaluation documents that it is appropriate to use FHP suppression/prevention funds for direct control of pine reproduction weevil in the Torch Fire plantation. Funds have been allocated and the treatment will occur by March 31, 2002.

If you have any questions regarding this report or need additional information please contact any of the Forest Health Protection entomology staff.

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